

What is claimed is:

1. A hologram film comprising:
a hologram recording film;
a main-hologram formed in the hologram recording film; and
a sub-hologram formed in the hologram recording film adjacent to the main-hologram,
the sub-hologram indicating information substantially specific to the hologram film.
2. The hologram film according to claim 1, wherein the sub-hologram indicates a
serial number of the hologram film.
3. The hologram film according to claim 1, wherein the hologram recording film
includes a photo-polymer.
4. The hologram film according to claim 1, wherein the main-hologram includes a
hologram combiner.
5. The hologram film according to claim 1, wherein the main-hologram includes a
diffusion reflection hologram.

6. A hologram tape comprising:
- a hologram recording tape;
 - a plurality of duplicated main-holograms formed in the hologram recording tape at a predetermined interval; and
 - a plurality of sub-holograms formed in the hologram recording tape, each of the sub-holograms being disposed adjacent the respective one of the main-holograms, each sub-hologram indicating information substantially specific to the adjacent hologram.
7. The hologram tape according to claim 6, wherein each of the sub-holograms indicates a serial number of the adjacent hologram.
8. The hologram film according to claim 6, wherein the hologram recording tape includes a photo-polymer.
9. The hologram film according to claim 6, wherein each of the main-holograms includes a hologram combiner.
10. The hologram film according to claim 6, wherein each of the main-holograms includes a diffusion reflection hologram.

11. A method for manufacturing a hologram film having a duplicate of a master hologram and identification information substantially specific to the duplicate, the method comprising the steps of:

providing a hologram recording film;

positioning a master hologram plate adjacent the hologram recording film so as to produce an interference pattern in the hologram recording film under irradiation of laser light, the master hologram plate having the master hologram and an optical element thereon, the optical element being for use in printing the identification information on the hologram recording film; and

printing the duplicate of the master hologram and the identification information in the hologram recording film, the master hologram being duplicated in the hologram recording film by irradiating the master hologram plate with the laser light, the identification information being printed on the hologram recording film via the optical element on the master hologram plate.

12. The method according to claim 11, wherein the step of printing includes the steps of:

directing ultraviolet radiation carrying a pattern information corresponding to the identification information towards the optical element of the master hologram plate to inactivate a portion of the hologram recording film corresponding to the pattern information; and

directing the laser light towards the master hologram plate to form the interference pattern in the hologram recording film to duplicate the master hologram on the hologram recording film, the laser light at the same time irradiating the inactivated portion of the hologram

recording film via the optical element of the master hologram plate to print the identification information corresponding to the pattern information of the ultraviolet radiation.

13. The method according to claim 11, wherein the step of printing includes the steps of:

directing ultraviolet radiation carrying a pattern information corresponding to the identification information towards the optical element of the master hologram plate to inactivate a portion of the hologram recording film corresponding to the pattern information;

directing the laser light towards the master hologram plate to form the interference pattern in the hologram recording film to duplicate the master hologram on the hologram recording film; and

directing laser light different from the laser light for the hologram duplication towards the inactivated portion of the hologram recording film via the optical element of the master hologram plate to print the identification information corresponding to the pattern information of the ultraviolet radiation.

14. The method according to claim 11, wherein the optical element on the master hologram plate is a reflective type controllable display device, and

wherein the step of printing includes the step of directing the laser light towards the master hologram plate to form the interference pattern in the hologram recording film to duplicate the master hologram in the hologram recording film, the laser light at the same time irradiating the reflective type controllable display device on the master hologram plate to print

the identification information corresponding to a pattern displayed on the reflective type controllable display device.

15. The method according to claim 11, wherein the optical element on the master hologram plate is a reflective type controllable display device, and

wherein the step of printing includes the steps of:

directing the laser light towards the master hologram plate to form the interference pattern in the hologram recording film to duplicate the master hologram in the hologram recording film; and

directing laser light different from the laser light for the hologram duplication towards the reflective type controllable display device on the master hologram plate to print the identification information corresponding to a pattern displayed on the reflective type controllable display device.

16. The method according to claim 11, further comprising the step of disposing a transmission type controllable display device across at least a portion of an optical path of the laser light,

wherein the optical element on the master hologram plate is a reflective mirror, and

wherein the step of printing includes the step of directing laser light towards the master hologram plate to form the interference pattern in the hologram recording film to duplicate the master hologram on the hologram recording film, the laser light at the same time irradiating the reflective mirror on the master hologram plate through the transmission type controllable display

device to print the identification information corresponding to a pattern displayed on the transmission type controllable display device.

17. The method according to claim 11, further comprising the step of disposing a transmission type controllable display device in at least a portion of an optical path of the laser light,

wherein the optical element on the master hologram plate is a reflective mirror, and

wherein the step of printing includes the steps of:

directing laser light towards the master hologram plate to form the interference pattern in the hologram recording film to duplicate the master hologram on the hologram recording film;
and

directing laser light different from the laser light for the hologram duplication towards the reflective mirror on the master hologram plate through the transmission type controllable display device to print the identification information corresponding to a pattern displayed on the transmission type display device.

18. The method according to claim 11, wherein the step of providing the master hologram plate includes disposing the hologram recording film over the master hologram plate,
and

wherein the step of directing the laser light includes directing scattered laser light towards the master hologram through the hologram recording film.

19. The method according to claim 11, wherein the step of providing the master hologram plate includes the steps of disposing a transparent layer on the master hologram plate and disposing the hologram recording film on the transparent layer, and

wherein the step of directing the laser light includes directing scattered laser light towards the master hologram through the hologram recording film and the transparent layer.

20. The method according to claim 11, wherein the hologram recording film is formed of a photo-polymer.

21. The method according to claim 11, wherein the optical element is part of the master hologram.

22. The method according to claim 11, further comprising the step of repeating the master hologram plate disposing step and the printing step at different locations of the recording film to print multiple duplicates of the master hologram on the recording film, the identification information printed adjacent the respective duplicated hologram being substantially specific to the adjacent hologram.

23. The method according to claim 11, wherein the hologram recording film is a tape shape and the multiple duplicates are printed at a fixed interval on the tape.

24. A method for manufacturing a hologram film, the method comprising the steps of:
coupling a hologram recording film with a master hologram plate having a master
hologram, the master hologram plate having a reflective area adjacent the master hologram; and
directing laser beams towards the master hologram plate to induce interference between
incident laser light and diffraction laser light from the master hologram in the recording film, at
least some of the laser beams radiating the reflective area through a transmission type
controllable display device to record a pattern in the hologram recording film corresponding to a
pattern displayed at the transmission type controllable display device.

25. The method according to claim 24, wherein a part of the master hologram is used
as the reflective area.

26. A method for manufacturing a hologram film, the method comprising the steps of:
coupling a hologram recording film with a master hologram plate having a master
hologram, the master hologram plate having a reflection type controllable display device
adjacent the master hologram; and
directing laser beams towards the master hologram plate to induce interference between
incident laser light and diffraction laser light from the master hologram in the recording film, at
least some of the laser beams radiating the reflection type controllable display device so as to
record a pattern in the hologram recording film corresponding to a pattern displayed at the
reflection type controllable display device.